

# HEALTH TRANSITION IN RURAL KERALA 1987-1996



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## **Health Transition In Rural Kerala 1987 - 1996**

Kerala's remarkable achievements in reducing mortality and fertility, and improving life expectancy of the population, have attracted the attention of scholars world wide. But doubts have been raised whether this has been at the cost of an increasing morbidity load. The mal distribution of the fruits of these achievements among the different socio-economic strata of society is also a disturbing fact. A KSSP study based on empirical research had tried to link the socio - economic and the health status of the state.

Major policy alterations and socio-economic changes have taken place in India and Kerala since the completion of the KSSP study.

In this context, it is important and necessary to know the state of morbidity, pattern of health expenditure and temporal trends on a periodic basis. This book is the result of such an enquiry.

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**Editors**  
**KP Aravindan**  
**TP Kunhikannan**



**Kerala Sastra Sahithya Parishad**



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## **Introduction**

The Kerala Sastra Sahitya Parishad (KSSP) has been striving for the last quarter of a century to initiate a Peoples' Health Movement. With the objective of improving the health status of the people in Kerala, it had carried out various interventions in the sphere of public health. A major intervention was the Peoples Health Survey conducted in 1987. The survey had brought out the much discussed volume, "Health and Development in Rural Kerala" (Kannan, et. al. 1991) with support from the World Health Organization.

The study basically tried to link the socio-economic and the health status of the state. It confirmed the findings of other studies that Kerala has made remarkable advance in basic indicators of health status. An inverse relation between the rate of morbidity and socio-economic status was noted. The study further noted that the high rate of morbidity in Kerala is a manifestation of its continued economic backwardness and poverty. It concluded that as long as poverty induced diseases dominate the pattern of illness, government interventions both in the health sector as well as non-health sectors would be required.

Major policy alterations and socio-economic changes have taken place in India and Kerala since the completion of the KSSP

survey of 1987. Concurrent with the new economic policy of liberalisation, there has been sharp rise in private medical expenditure (Kunhikannan & Aravindan - 1996). Rise in drug prices, changes in prescription patterns, overuse and misuse of medical technologies by medical providers, etc. have all probably contributed to this increase. After the 73rd and 74th amendments to the constitution, the state government has now handed over the administration of PHCs and CHCs to the Grama Panchayats and Block Panchayats, thus increasing the potential for direct people's participation and involvement. Simultaneously, initiation of the People's Plan Campaign has opened up new possibilities for local initiative.

In this context, it is important and necessary to know the state of morbidity, pattern of health expenditure and temporal trends on a periodic basis. We thought it appropriate to see what changes have taken place in a decade after the first KSSP survey of 1987. This study is the result of such an enquiry. Through this study we intend to generate data helpful to local bodies and people's organisations involved in health.

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## Methods

The current study is a household morbidity and expenditure survey based on two weeks recall. The study design is identical to the KSSP survey done in 1987. This is so because one of the chief objectives of the present study is comparison of morbidity and health expenditure with the findings of the previous survey.

Gram Panchayats in the state were numbered according to Geographical contiguity and 12% of the panchayats were selected by systematic random sampling. In the selected panchayats the same ward and the same households that were surveyed in 1987 were resurveyed. We assumed that 20% of the households surveyed in 1987 would not exist as such due to partition, migration or split up of families. Thus 12% of the households were selected to get data correctly on 10% of the same households of 1987.

But in reality, we could get data from only 8.53% of the houses surveyed in 1987. Besides the factors mentioned above, some of the panchayats have either ceased to exist, or probably there was difficulty in finding some of the houses because there has been revision of house numbers and delimitation of wards in the interim period.

This sample of 8.53% of the original households constitutes a panel and is more akin to a sequential cohort and not a fresh cross sectional one. Hence it has the advantage of better statistical power. But being a cohort of households rather than a cohort of individuals it is unlikely

to have the disadvantages due to changing demographic characteristics. For example, new births and deaths would have occurred in these households to offset the ageing of individuals sampled in 1987.

An added advantage is that it simultaneously captures the changes (temporal trends) in socio-economic status and health indices. Since health does not occur in a vacuum, it is felt that this would more accurately reflect changes in Kerala society that have occurred in the intervening 10 years.

The questionnaire was modified to the extent that morbidity and mortality data included provision for entering main symptoms and signs which were vetted later by a panel of experts to categorise diseases more accurately. By this method we were able to reduce the 'others' category to a great extent as compared to the 1987 survey.

The sample of 1996 households was compared to the entire sample of 1987 survey. A legitimate concern was whether the new sample was a true reflection of the 1987 households, especially for data like morbidity. For example it could be argued that the 1996 sample was biased towards more affluent socioeconomic groups and hence the morbidity is artificially low. To check this, we took out the original (1987) data sheets for the identical households that were resurveyed in 1996, and analysed it for selected parameters. This is shown in the charts and tables to follow as 1987 SS (for sub sample).

The volunteers were trained in seven centres, one centre for two districts, in one day training camps. Each survey team was to consist of three persons of which at least one was to be a woman. This target was however not achieved fully. The entire survey was done within a period of one week.

**Analysis:** While analysing data, the main change pertained to the socioeconomic classification. The same principle of classification was followed (Kannan et al 1991, pp26-30), the only difference being adjustment of the income categories to account for inflation at a compound rate of 10% per year. The cut off levels for categorising income into four groups in 1996 was Rs 236, Rs 448, and Rs 590 per capita as compared to Rs 100, Rs 190 and Rs 250 in 1987.

Validation of the sample: The validity of the sample can be ascertained by comparison of the demographic mix with that obtained in the population and the previous sample. All the districts in the state were represented in proportion similar to the population. Females constituted 1025 persons per 1000 males, a figure similar to the census data. Comparison by religion and caste with the previous sample is shown in table 1.

TABLE 1

COMPARISON OF SAMPLE CHARACTERISTICS: 1987 AND 1996		
Sample characteristic	1987 (%)	1996 (%)
<i>Religion</i>		
Hindu	56.9	56.6
Christian	21.5	21.7
Muslim	20.9	21.0
Others	0.4	0.7
<i>Caste</i>		
Scheduled castes	9.8	9.9
Scheduled tribes	2.1	1.4

## 1. Demographic profile

Demographic data from the survey should be read with caution. The sample of about 5000 people is too small to generate enough number of events -births and deaths- to enable us to make meaningful comparisons with either the previous survey or other studies in recent times. Nevertheless, we have computed event rates from this survey as follows:

TABLE 2:

VITAL EVENTS IN RURAL KERALA		
Event rate	1987	1996
Crude Death Rate	6.7	7.8
Crude Birth Rate	22.3	18.02



The increase in CDR of about 1.1 is too small to warrant any concern. We have to remember that the cohort of households that we are studying has aged by 10 years- a factor which may explain the increase in CDR. Death rate in the state remains at around 6 per 1000. Does this mean that our sample has a higher death rate than the average for the state? Since the sample size is too small, such a conclusion may be erroneous.

Birth rates have come down by more than 4/1000. This is in keeping with the general decreasing trend in birth rate in the state. Current estimates put the crude birth rate in the state at 17.7 (Population Research Centre, University of Kerala, (PRC) Thiruvananthapuram) and International Institute for Population Studies (IIPS), 1995. National Family Health Survey (MCH and Family Planning 1992-93). Bombay: Our estimate is close to this. The total number of births in the 1996 survey was too few to compute infant mortality rates. But the occurrence of two deaths in women related to childbirth is indeed disturbing.

We had computed standardized birth and death rates for the whole state on the data from the 1987 KSSP survey. We found that there is a declining trend in both birth and death rates with improvement in living conditions as captured by social classes [V Raman Kutty, K P Kannan, K R Thankappan and K P Aravindan. **How socio economic status affects birth and death rates in Kerala, India- results of a health study.** INTERNATIONAL JOURNAL OF HEALTH SERVICES 1993; 23: 372-386]. Such an exercise is not possible with the 1996 survey because of the small numbers involved.

10.4% of subjects were above the age of 60 years, and 8.25% above the age of 65 years. This is to be expected, given that the cohort of households has aged. 65.7% of total deaths occurred in people aged above 60, and 34.28% in those aged above 65 years.

Common causes of mortality from the survey are discussed in the table below. Compared to similar statistics from 1987, note that cardiovascular events continue to be the leading cause of death. Accidents have moved from rank 4 to 3, and suicides from 5 to 4. These seem to be indicative of the trend in the state: degenerative and chronic diseases and accidents are the leading cause of death in the



state. The prominence of suicide as a cause of death is disturbing. It is to be noted that cardiovascular events, cerebro-vascular events and accidents are to a large extent preventable.

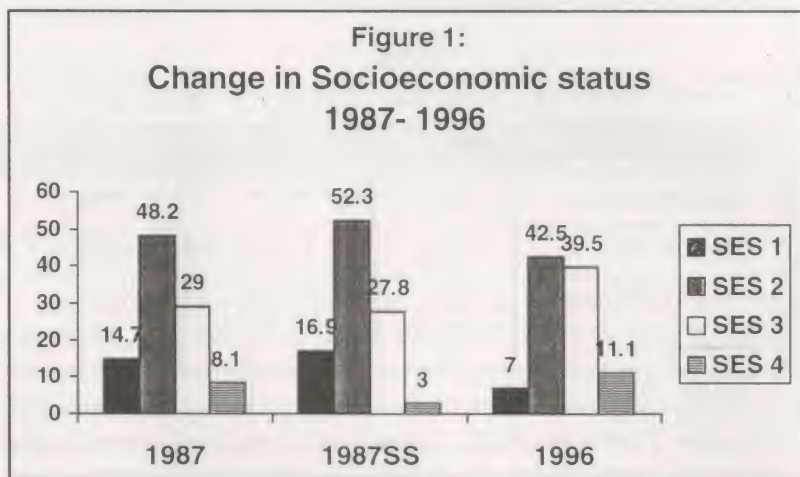
TABLE 3:

SOME COMMON CAUSES OF MORTALITY IN KERALA, FROM THE KSSP SURVEYS IN 1987 & 1996.				
Cause of death	1987 rank	%	1996 rank	%
Heart attack	1	10.4	1	14.28
Cerebral Thrombosis	7	2.4	1	14.28
Cancer	2	7.4	2	8.57
Accidents	4	3.6	3	5.7
Suicides	5	3	4	2.8

### 1.1 Socio-economic status, infrastructure and other amenities

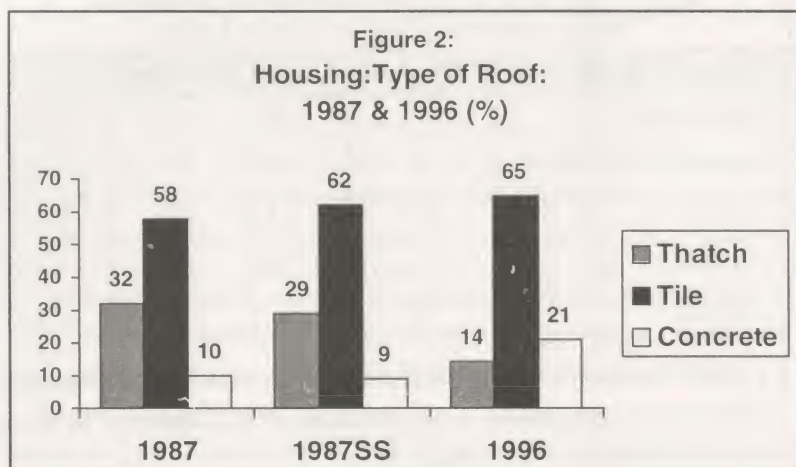
The change in the Socio-economic status of the population, between the two surveys is seen in figure 1.

The proportion of the 'poor' (SES 1 and 2) declined from 63% to less than half the population (49.5%). The poorest class decreased



from 14.7% to 7%. Figure for the sub sample (1987 ss) is very close to the 1987 whole data.

There was also significant improvement in housing, (figure 2) and sanitation (table 4). Thatched houses decreased from 32 to 14 percent



with concomitant increase in tile and concrete roofing. The practice of open defecation declined from 51.4% to 27.6%, and 69.9% of the houses possessed latrines in 1996 compared to 48.3% in 1987.

TABLE 4

HOUSEHOLDS ACCORDING TO SANITARY FACILITIES			
Type of sanitation	1987 (%)	1987 SS (%)	1996 (%)
Sanitary latrine	34.1	31.2	52.9
Other latrine	14.2	17.7	17.0
Open defecation	51.4	51.1	27.6
Missing	0.3	0	2.5

During the period, safe water availability (own well and house pipe) rose from 57.4% to 69.3%, mainly as a result of more families constructing wells (table 5). The sub sample of the same households

in 1987 (shown as 1987 SS) is seen to be broadly similar to the 1987 whole data. The present status for availability of some of the household amenities is shown in table 6. This can be used as a reference for future studies.

TABLE 5

HOUSEHOLDS ACCORDING TO DRINKING WATER SOURCE			
Drinking water source	1987 (%)	1987 SS	1996 (%)
Own well	53.8	53.9	65.1
Public well	27.2	29.2	17.6
Public tap	8.5	7.9	7.5
House pipe	3.6	4.2	4.2
Others/missing	6.9	4.7	5.7

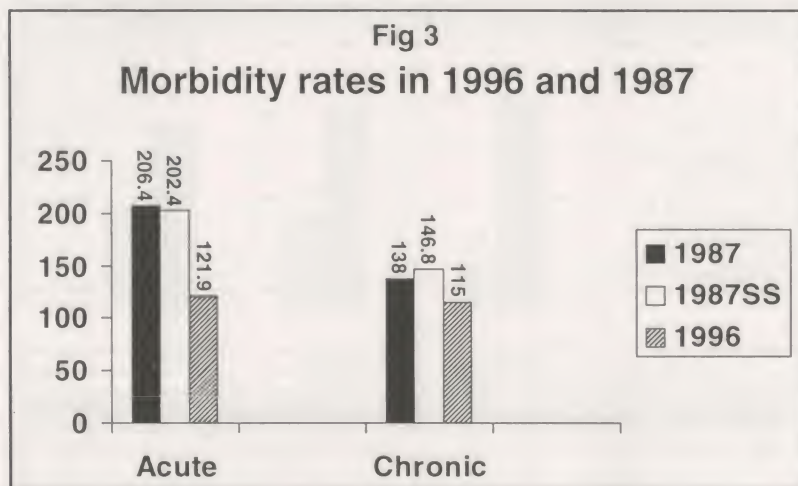
TABLE 6

OTHER INDICATORS	
Indicator	% of households
Electricity	63.8
Newspaper	31.7
Magazine	24.8
TV	8.5
Radio	74.5

## 2.Total morbidity

The overall morbidity rate for acute disease was 121.86/1000 population. The rate for chronic diseases were 114.98/1000. This denotes the prevalence of diseases just 14 days before the date of interview. Because acute disease can fluctuate with time and season the rate may be higher or lower in other months. As July is one of the "seasons for hospital"; we can safely imagine that it may also produce

the highest rate for acute disease. The current figure for acute diseases is only 59 % of the corresponding figure for 1987 survey. There is 41% reduction in acute morbidity load. The reduction in chronic disease load is to the extent of 16.7 % i.e. it remains as 114.98 in 1997 as against 138.02 in 1987). The values in the 1987 sub sample are remarkably close to the whole sample, thereby validating the current study. This is shown in Fig.3.



The apparent reduction in overall morbidity can be explained in 3 ways: a) Actual reduction in morbidity in the population. b) Change in perception of disease by people c) Error in estimating the events either in 1987 or in 1996. Part of the greater rate of acute morbidity in 1987 can perhaps be explained by an epidemic. This can account for the high rate of fever, cough, body ache and diarrhoea. The reduction in acute and chronic disease can only be explained by a combination of above factors and not merely due to a single cause. The probability of actual reduction in disease can be corroborated by the reduction in communicable diseases over a decade. In 1987, 67.44% of overall morbidity was due to communicable disease. The proportion declined to 57.93% in 1996. This results in increase in proportion of morbidity due to non-communicable disease to 42.07% in the place of 32.56 in



1987. Though there was a change in proportions the overall load has recorded a reduction. The current figures for total morbidity & proportions of acute and chronic diseases brings attention to the emergence of non-communicable diseases as important public health problems. The changing life- style, increasing life expectancy, access to health care and socio-economic development all might be contributing to this health transition.

Though the overall morbidity is less when compared to that of 1987 survey, the finding is in corroboration with similar studies carried out in the state. Studies by Panikar et al. has brought out the disease load in the community from three districts of Kerala. The findings are in contradiction to the reported figures of this study (Table 1). Acute as well chronic diseases are reported to be low, to the extent that only 64.75 % of acute disease and just 51.13% of chronic disease compared to the KSSP study was observed in the Panikkar study. Another survey carried out by Leela provides an estimate closer to that of the KSSP findings. In this investigation conducted in a non-coastal as well as a coastal PHC the figures ranged from 108.2 to 110.95 per 1000 population for acute diseases and 117.25 to 153.14 for chronic diseases. Considering the various reports right from 1974 (National Sample Survey Organization-NSSO) the 1987 KSSP study estimate on acute morbidity stands out. This wide range of variation in reported morbidity leads us to consider investigator bias as an explanation. Separate functionaries with differing educational backgrounds carried out all these studies. KSSP relied on volunteers on the two occasions: the teams were not identical. Panikkar used paid investigators with college level education and Leela carried out the study with Anganwadi workers.

TABLE 7

MORBIDITY LOAD/ 1000 POPULATION FROM DIFFERENT STUDIES IN KERALA						
Disease	1996 KSSP	1995 Panikkar	1998 Leela PHC1	1998 Leela PHC2	1987 KSSP	1974 NSS
Acute	121.86	78.9	108.2	110.95	206.39	71.21
Chronic	114.6	58.6	117.25	153.14	138.02	83.68
<i>PHC1= Malayinkil PHC2 = Pulluvila</i>						

### 3. Class and Gender

#### 3.1 Socioeconomic class and morbidity

The morbidity rates for the different classes in the two surveys is given in table 8.

TABLE 8

MORBIDITY RATES BY SOCIO-ECONOMIC CLASS						
SES	Acute Morbidity			Chronic morbidity		
	1987	1996	% decrease	1987	1996	% decrease
I	239.8	149.7	37.6	152.7	98.6	35.4
II	188.3	118.9	36.9	138.6	112.3	19.0
III	189.5	119.2	37.1	135.9	120.3	11.5
IV	162.5	94.4	41.9	128.6	116.5	9.4

The following points can be noted from the above table.

1. Pattern of acute morbidity is same as in 1987. The fall is similar in all social groups
2. Decline in chronic morbidity is not as substantial as in case of acute diseases. There is an interesting gradient in the degree of decline, which is highest in SES I, and not very significant in SES IV. This

is most likely a reflection of a) marked decline in infectious diseases which was most prevalent in the poor and b) slight increase in diseases like hypertension and diabetes which seen more in the rich.

### **3.2 Gender difference in total morbidity**

Acute morbidity among males was 124.84/1000. The rate for women were 131.82/1000. The observed difference is not statistically significant. For chronic diseases the prevalence rate among men was 142.72/1000 population. Among women the rate was 102.92/1000. The observed difference is statistically significant. This is in contrast to the higher figure for women reported from other studies. This can be explained since most interviewers were males. The respondents were also mostly males. This could introduce an obvious bias against reporting of female sickness in the survey. Otherwise, as we have higher proportion of women in the elderly category, we expect a higher rate of morbidity among them. In 1987 the KSSP investigation team comprised of at least one woman. In 1996 this was not enforced.

## **4. Morbidity pattern**

What constitute the acute illnesses? The disease pattern more or less remains the same as that of 1987. 57.93 % of total acute morbidity is contributed by communicable diseases and 42.07 by non-communicable diseases. The corresponding proportion in 1987 was 66.77 and 33.33. Though there is a reduction in total morbidity the proportion contributed by non-communicable diseases has increased in 1996 as consequence of the reduction in communicable diseases. Increasing proportion of non-communicable diseases is an indicator of the health transition taking place in the state.

### **4.1 Acute Communicable disease**

#### **4.11 Water borne diseases**

Water borne diseases has recorded a dramatic fall in these years. The overall category which includes diarrhoeal disease, jaundice, and



typhoid constitute 25.08 % of the disease load in 1987 while the corresponding figure for 1996 is just 2.26%. This is a reduction of 90%. Waterborne diseases are commonly expected among children. The proportion of children less than 10 years old in the present study is just 11.85 %, while from population estimates we should expect around 18-19 %. To what extent the reduction in diarrhoeal diseases can be attributed to this? Definitely 90% reduction cannot be explained due to this alone. Other possible explanations could be: a) Actual reduction due to improved sanitation and water supply, b) Reduction due to improved education and better health behavior c) Overall socio economic development has reduced the water borne diseases, d) Investigator bias.

The practice of open defecation declined from 51.4% to 27.6% and the use of sanitary toilets in Kerala has improved from 34.1 % in 1987 to 52.9% from 1987 to 1996. If this can be taken as an indicator of development the reduction can be attributed significantly to this alone. Apart from this the improvement in immunization coverage, especially that of measles might have contributed to this reduction. Similarly the improvement in nutritional status of children, high rate of breast-feeding (as supported by the National Fertility and Health Survey) can also explain partially the reduction.

TABLE 9

WATER BORNE DISEASES IN KERALA: PREVALENCE RATE PER 1000 FROM VARIOUS STUDIES				
Disease	1987*	1996*	1998 phc1**	1998 phc2**
Diarrhoea	22	1.5	2.34	9.04
Typhoid	0.28	0.655	--	--
Jaundice	2.8	0.655	0.639	1.06
* KSSP		** Leela		

Diarrhoeal diseases recorded a reduction in the reports of the Directorate of Health Services. In 1994, 786201 cases were reported.



In the subsequent years the number came down to 700 974, 675848, and in 1997 it was just 582 537 with 45 deaths. There is a 26% reduction in morbidity as per records of Directorate of Health Services. The mortality reduction over the years is dramatic. The prevalence of water borne diseases in the two selected PHCs were 2.08 % in Malayinkil and 10.1 % in Pulluvila. This is comparable to the present study. The higher prevalence of diarrhoeal disease in coastal PHC can be explained in the context of its backwardness and poor health facilities.

TABLE 10:

REPORTED DIARRHOEAL DISEASES IN THE STATE AS PER DHS RECORDS				
Year	1994	1995	1996	1997
Cases	786201	700974	675848	582537
Death	65	61	119	45

#### 4.1.2 Fever

This includes all diseases like viral fevers, and upper and lower respiratory tract infections.

Though categorized as fever the group contains simple fevers, upper respiratory tract infections, lower respiratory tract infections, simple cough or running nose. This is the most common disease in our population. Though the extreme age groups are affected more, all are exposed to the risk of infection. The proportion of people who escape infection altogether in any age group will be too small and most of them will be in their 20's. The disability produced by this need not be uniform for all components mentioned earlier. As we have collected data in general, without categorizing the episodes into mild, moderate or severe, all forms are included in the group 'fever'. At any point in time 6.7 % to 7.9% of our population is suffering from this disorder. The load has decreased over the years from 11.8% in 1987. The 1996 figure is in agreement with the PHC survey by Leela - 38.81 and 78.95 in the two PHCs representing coastal and non coastal areas where morbidity tends to vary.

TABLE 11

PREVALENCE OF FEVERS (ALL FORMS) IN KERALA 1987 & 1996		
Disease	1987	1996
Pneumonia	0.55	0.87
Fever & cold	118.5	67.95

The prevalence of fevers can vary with the occurrence of epidemics or with endemic situations. As the KSSP surveys were carried out in the same period i.e. July on two occasions (1987 & 1996) chances for such variation are less though not ruled out. We have already seen that the greater morbidity in 1987 could probably be due to a viral epidemic at the time. The small increase in pneumonia over the years need not be taken to be significant in the sense that it could be due to a chance variation.

Higher prevalence rate of fevers & Acute Respiratory Infection (ARI) among out-patients is evident from the OP attendance of PHC's. Nearly 30-40 % of all OP attendance in PHC and other peripheral institutions are solely due to fevers and/ or respiratory infections. The following data shows the trend of ARI in Kerala over last four years (Table 5). These data were obtained from the records of DHS. The data show that disease load remains more or less the same over the years. These figures might be an under reporting of the total events in the state.

TABLE 12

TREND OF ARI AND PNEUMONIA IN KERALA (DHS)				
Year	1994	1995	1996	1997
ARI case	3020084	3189579	3680295	3623312
Death	92	150	145	197
Pneumonia	19275	18455	23180	21254
Death	28	28	25	31

### 4.1.3 Measles, Mumps, Tetanus, Malaria & Filaria

Measles has recorded a decline over the years as shown in table 5. This reduction corresponds to the increase in immunization coverage achieved over the years. Measles has come down to less than 2/3 compared to 1987 figures though in absolute number the reduction was not big.

TABLE 13

MEASLES, MUMPS, TETANUS & FILARIA 1987 & 1996 PER 1000 POPULATION		
Disease	1987	1996
Measles	0.36	0.22
Mumps	0.49	--
Tetanus	0.17	--
Filaria	0.14	--

There can be doubts regarding the confirmation of the diagnosis of measles. However, the stray occurrence of the disease in some pockets where immunization coverage may not be satisfactory cannot be ruled out.

Mumps usually occurs in epidemics in school children. But in the present study none was reported. The decline in the occurrence of tetanus corresponds with increased coverage of immunisation among children and among antenatal women. Filaria situation in the community is not reflected in this data. This is because filaria as an acute condition is being investigated here. Therefore it reflects reduction of acute manifestation of filariasis (acute lymphangitis); this cannot be considered as the reduction of disease in the population. Moreover, there is a little bit of resistance on the part of subjects to divulge the condition.

### 4.2 Tuberculosis as acute disease

The present study brings out some instances where tuberculosis has been reported among the acute complaints. The rate per 1000



population was 0.8. This rate is obviously less than that of official figure of tuberculosis prevalence for the state i.e. 1.32 per 1000. Tuberculosis as a chronic disease will reflect the situation truly. Acute manifestation or consultation for the disease will be a) to make diagnosis of TB, b) for periodic issue of drugs and check up c) on development of acute severe symptoms d) drug reactions. Present figures show about 20% (current prevalence is 4.16/1000 population) of all tuberculosis patients make at least one consultation in two weeks.

### **4.3 Other communicable diseases that were left out**

Some other communicable diseases like urinary tract infections (UTI), sexually transmitted diseases (STD) and vaginal infections were left out in the study entirely. This cannot be considered entirely due to low prevalence of the disease. Rather it can be attributed partly to the failure of the study to bring it out.

### **4.4 Aches and pains**

In this category are included different aches and pains affecting various organs or parts of the body. The commonest among them are the problems associated with the joints, backache and body ache. The medical diagnoses for this condition may be several. But as a symptom that warrants medical care this group so far has not received much attention. World Health Report also mentions the importance of the symptom and ranks it as number 2 in the list of the first 10. Headache, which usually goes without any specific diagnosis, constitutes a significant problem at the community level. Reasons could vary from a mild fever to hypertension or the mental stress the subject is facing for the moment.



TABLE 14

RATES OF DIFFERENT ACHES AND PAINS PER 100 POPULATION		
Disease	1987*	1996
Joints, back & Body ache		12.44
Toothache		1.31
Chest pain		1.53
Headache		3.49
* all these are categorized as others		

The emergence of toothache as an entity should be mentioned. The recognition of the symptom which requires medical attention is itself a turning point in people's perception. There is every chance that the problem is under-reported. In a school survey it was demonstrated that nearly 30% of children had the complaint. Dental caries is common even among the elderly. The present figure does not reflect the overall situation.

Similarly unexplained chest pain forms another important reason for medical consultation. Most often it remains without any relief. Medical conditions can vary from costochondritis & stress to coronary heart disease (CHD). The complaint is usually severe enough to make people lethargic and under-productive.

It should be kept in mind that all aches and pains though listed here as an acute condition need not be for a short interval. They tend to pester the subjects for a long time. Thus the consultation frequency increases. They can also be considered as a chronic disease/ symptom as well. Practitioners often fail to make a diagnosis. As they do not have a proper explanation they "prescribe something" and "dispose" the patients

#### 4.5 Chronic disease as a reason for acute consultation

Diseases like coronary artery diseases, diabetes mellitus, hypertension and stroke are directly related to lifestyles. The magnitude

of these problems can be only gauged from the reporting of chronic diseases. Apart from increasing the morbidity load in the community these diseases increase the number of consultations. This brings added burden to the health care delivery system. They form nearly 9 - 10% of overall consultations for acute complaints. The consultation rate in the population is a function of the disease prevalence, detection rate and popular perception of the disease in the community. In spite of the high prevalence of hypertension, the consultation rate was low. Obviously this can be attributed to the low detection rate. Even for coronary artery disease the reported figure of 14/1000 adult population over 25 is not reflected in consultations. Stroke or paralysis ought to have been included in the chronic disease category.

TABLE 15

CHRONIC NON-COMMUNICABLE DISEASES AS A CAUSE OF MEDICAL CONSULTATION		
Disease	1987	1996
Hypertension	2.0	5.9
CAD	1.1	1.3
Paralysis	2.0	0.87
Diabetes	1.4	1.75

#### 4.6 Chronic respiratory conditions as acute disease

Respiratory diseases are increasing all communities. Cough and difficulty in breathing constitute the symptoms. Part of the group will be included in the fever, ARI group. A good number of the patients on drugs will be on self-medication. They may not contact a medical officer frequently. So the disease load has to be estimated from the chronic diseases list. Some of them develop acute exacerbation and seek help. It is possible that what is reported only represents this subgroup. However, the reported figures vary between studies. The present study puts it as 4.15 when compared to 37.85 and 18.61 per 1000 population in the PHC level information.

Allergy has been categorized along with chronic complaints, probably keeping asthma in mind. However, asthma and allergy are not similar in people's perception. Therefore there is some confusion as to what exactly this category actually reports on. Age, genetic/immunologic make up, extent of pollution, living conditions all might be contributing to the development as well as sustenance of these diseases.

TABLE 16

PREVALENCE OF CHRONIC RESPIRATORY CONDITIONS AS A CAUSE OF MEDICAL CONSULTATION PER 1000 POPULATION		
Disease	1987	1996
BronchialAsthma	5.2	4.15
Allergy	2.8	1.09

#### 4.7 GIT problems

Usually this includes abdominal pain, "gas trouble" and other nonspecific GIT complaints. The rate per 1000 population comes to 5.46 in the present study. In any outpatient attendance one can see the number of such patients is quite significant. In the 1987 survey it was included in the "other" category. Therefore no comparison is available. The group may include acid peptic disease, helminthiasis, food poisoning and similar conditions.

TABLE 17

MORBIDITY DUE TO ACUTE ILLNESS IN RURAL KERALA FOR TWO WEEKS PERIOD IN JULY 1996 AND IN JULY 1987 (Rate/1000)					
No	Illness	1996	%	1987	%
1	Diarrhoeal disorders	1.50	1.22	22.0	10.15
2.	Fever	67.95	54.10	118.5	54.65
3.	Measles	0.22	0.17	0.59	0.27
4.	Jaundice	0.655	0.52	2.8	1.31
5.	Typhoid	0.655	0.52	0.28	0.13



No	Illness	1996	%	1987	%
6	Asthma	4.15	3.32	5.2	2.4
7	Pneumonia	0.87	0.7	0.55	0.26
8	Heart attack	1.3	1.05	1.1	0.53
9	Paralysis	0.87	0.7	2	0.94
10	Diabetes	1.75	1.2	1.4	0.66
11	HT	5.9	4.72	2	0.92
12	Goitre	0.65	0.52	0.35	0.16
13	Allergy	1.09	0.87	2.8	1.27
14	Joint problem	8.08	6.5	---	---
15	Back ache	2.40	1.92	---	---
16	Tooth ache	1.31	2.1	---	---
17	Eye	1.3	1.05		
18	Ear	0.2	0.17		
19	Body ache	1.96	1.57		
20	TB	0.87	0.7		
21	Tumor	0.65	0.52		
22	GIT/stomach				
	gas trouble	5.46	4.4		
23	Head ache	3.49	2.8		
24	Old age	1.09	0.9		
25	Chest pain	1.53	1.22		
26	Skin	5.24	4.20		
27	Other	3.27	2.62		
28	Mumps			0.49	
29	Filaria			0.14	
30	Tetanus			0.17	
31	Malaria			0.36	



## 5. Chronic diseases Pattern

The chronic diseases are of different types. They can be grouped into chronic infections, chronic respiratory problems, joint problems, hypertension-CAD-diabetes mellitus group, cancers and mental disorders. All of them have something to do with the life style. The treatment more often is symptomatic except for chronic infections. Obviously the thrust is on prevention and control of disease through life style modification. (see table 18)

### 5.1 Chronic respiratory diseases

Respiratory diseases remain unchanged when compared to that of 1987 figures (16.5 and 14.25 respectively in 1987 and 1996). They mainly represent bronchial asthma. COPD patients also come in this category. The rate does not show much change over time. But there could be pockets where the rate could be higher. Because of increasing pollution, increase in use of fossil fuels, tobacco use, more and more of transport also lack of exercise and increasing age, we tend to expect more number of such patients over time. As the observation is based on small number of subjects it is too difficult for us to comment on any trend. Panikar reports a prevalence of 12.9/1000 for bronchial asthma for the state. This agrees with the current study.

TABLE 18

THE PREVALENCE OF CHRONIC DISEASES/1000 POPULATION.			
Sl No	Disease	Rate/1000	% of total chronic disease
1	Leprosy	..	..
2	TB	4.14	3.3
3	Filaria	1.38	1.1
4	Asthma	14.25	11.3
5	BP	22.99	18.2
6	CAD	5.98	4.7
7	Cancer	2.3	1.8
9	Gynec	4.14	3.2

Sl No	Disease	Rate/1000	% of total chronic disease
10	UTI	3.68	2.9
11	Joint	22.52	17.9
12	Goitre	2.3	1.8
13	Diabetes	5.52	4.4
14	Backache	3.68	2.9
15	Mental	0.92	0.7
16	Other	32.18	25.5

## 5.2 Chronic Infections

In this category are included Tuberculosis, Leprosy, Filariasis and chronic urinary tract infections. The figures are presented in table 19.

Tuberculosis remains one of the major chronic infections even today. The rate shows a decline over time. However, the absolute reduction is not statistically significant. The data from the PHC's show that the problem warrants much attention and that most often the disease exists in pockets. The figures from the DHS report is 1.32 per 1000 population. When compared to this, the current figure of 4.16/1000 is three times higher. Could it be because of poor registration system or is it due to non-registration of tuberculosis patients with district tuberculosis centres? Another important finding is that it is only 25% of the prevalence estimates of National Sample Survey 1954. The argument can be raised that 75% of the cases are still undetected. But going by the state experience in health care seeking behaviour this explanation is difficult to swallow. The prevalence in the state should be much less than the stated figure in the survey, which was conducted more than 50 years ago. Prevalence of tuberculosis from Panikar is 2.7/1000. Apparent difference between different studies in Kerala could be due to sampling error. KSSP sample is spread over all the state while the other is from selected districts.

TABLE 19

PREVALENCE OF CHRONIC INFECTION IN KERALA /1000 POPULATION		
Disease	1987	1996
TB	6.2	4.16
Leprosy	0.43	--
Filaria	0.76	1.38
UTI	4.8	3.68

Leprosy is another disease that remains as a challenge to Kerala's public health infrastructure. The present study did not bring out any case. The stated figure for Kerala is 1.9 per /10000 (DHS). From national statistics it is expected that in Kerala prevalence is in between 1-3/10000. If our effort succeeds it may be possible for us to effectively control the disease within a short period of time.

Filaria may be reported as an acute disease with filarial lymphangitis or as a chronic disease with elephantiasis. But most of the cases of elephantiasis remain undisclosed in a survey due to various reasons. The present study shows a doubling of the rate over the period of time. It could be due to actual increase in filaria or a simple chance variation.

Urinary Tract Infection is one of the commonest problems the elderly face. Both genders are affected due to different reasons. It could be due to prostate enlargement among males or due to loss of muscle tone among women. It is also common among women of reproductive age. Hygienic practices and prompt interventions may reduce the disease load in the community. The apparent reduction observed here, cannot be taken for granted. Most often it remains undisclosed. This is more so when we look into the sexually transmitted diseases. We could not get not even a single case of STD. Obviously the fact was suppressed.



### 5.3 Chronic joint problems

TABLE 20

PREVALENCE OF JOINT DISORDERS AND BACKACHES/ 1000 POPULATION					
Disease	1987	1996	PHC1*	PHC2*	Panikar@
Joint disease & backache	26.20	18.3	4.9	27.47	10.5
* Leela @Panikar 1995					

Joint diseases are considered as among the most common symptoms people face worldwide. World Health Report puts it as number 2 among 10 common symptoms people seek medical care for. The rate is similar on two KSSP studies. The perception factor should also be considered here.

### 5.4 Diseases of circulatory system

In this group are included Coronary Heart Diseases and High Blood Pressure. Diabetes is also included in this category due to its consequences on circulatory system.

TABLE 21

PREVALENCE OF CHD, HT, DM/1000 POPULATION		
Disease	1987	1996
CHD	5.0	5.98
Hypertension	11.8	22.99
Diabetes mellitus	3.4	5.52

The problem of coronary heart disease remains more or less the same. We expect it to rise over the years. As per the available figures it has not occurred. But one can easily assume that the figure presented relates only to detected cases. If we assume that 50% remains undetected, this means that around twice the reported figure actually has the disease, i.e. 12/1000 adults have CHD. Undetected cases may remain unreported. As per previous studies (Raman Kutty 1993)



the prevalence in Thiruvananthapuram district is of the order of 14/1000 population over 25 years. These are clinical cases. ECG positives constitute an even greater figure, to the tune of around 38/1000. When compared to this the extent of under reporting can be assessed to be more than 50% of all clinical cases. However clinical detection rate over years remains more or less the same. Panikar reports 5.5/1000 total population or 11/1000 of adult population.

The prevalence of hypertension in the population is 22.99/1000 population. This is almost double that of 1987 survey. This can be taken as a pointer to the trend of CHD epidemic that is yet to come. Considering hypertension as an adult disease 46/1000 will be having the disease at this rate. Panikar puts the figure as 22.6/1000 total population. This is very close to the KSSP estimate. There is a low prevalence of hypertension in the fishing community ( 10.28 / 1000 according to Leela) . This is consistent with low prevalence of CHD and diabetes mellitus among them. This could be due to the exercise pattern, diet and low prevalence of obesity and other risk factors. In another study among a suburban population the prevalence of hypertension varied between 12.8% to 24% of adult population. (Vijayakumar, unpublished dissertation) Going by this estimate it can be assumed that only 1/3- 1/6 of the cases are detected. The prevalence could be different if we take Kerala as a whole.

The diabetes situation throws light upon another emerging epidemic in our state. The disease is showing an increase over the decade from 3.4/1000 to 5.52/1000 over years. When expressed for adult population it may reach up to 10.4/1000 population if we presume that diabetes is only an adult disease, forgetting juvenile diabetes, which is a very rare disease. Panikar reports 11.7/1000 population for Kerala. Isolated studies which included examination of blood sugar levels of the subjects, in urban and rural parts of Thiruvananthapuram shows the prevalence of diabetes to be much higher. Rural prevalence comes to 60/1000 population and urban more than 100/1000 population. Obviously there will be a lot of undetected cases. Its detection and control will do a lot for controlling CHD in the state. Studies in other parts of India also show that diabetes is increasing as an epidemic in the making.

## **6. Gynaecological disorders**

Gynaecological problems have not recorded any change in occurrence rate over the years: 4.8/1000 in 1987 and 4.14/1000 in 1996. If we double it as they apply only to women of childbearing age, the rate will be 8.28/1000; if we consider all women over the age of 10 years, the rate will come to 10.35/1000

## **7. Mental disorders**

The rate of occurrence of mental disorders is 0.92/1000. PHC reports put it at 4-5/1000. In reality the figure should be much more than this. Perhaps only advanced and severe cases have been reported. Mild and moderate cases may go unnoticed. The prevalence estimate for India is of the order of 18-20/1000 population. Prevalence of mental disorders has an important bearing for the state as it has the highest suicide rate in the country. Programmes for addressing the reduction in suicide rate should take note of this. Without detecting the mental illnesses we will not be able to make a dent in the problem.

## **8. Goitre.**

The prevalence of goitre remains the same in the state even after years of marketing of iodised salt. Non-iodised salt consumption in Kerala has gone down significantly. Still the prevalence remains at around 2.3/1000 – It was 2.1 /1000 in 1987. The reported prevalence of goitre for the state from official records seems an overestimate.

## **9. Cancers**

The prevalence of cancers has gone up from 0.92 in 1987 to 2.3 / 1000 in 1996. It could be due to better detection or due to perception factor making people discuss the disease more openly. However, the prevalence of 230/100,000 in the state should be viewed with concern. Already it is one of the 10 leading causes of death in Kerala. Cause specific death rate from this study can be worked out at 85.71/1000. In the years to come the rate will be probably increase.

TABLE 22,

## COMPARISON OF C/C MORBIDITY 1987 AND 1996

Disease	1996 Rate /1000	1996 (%)	1987 Rate /1000	1987 (%)
Leprosy	..	..	0.43	0.3
TB	4.14	3.3	6.2	4.27
Filaria	1.38	1.1	0.76	0.52
Asthma	14.25	11.3	16.5	11.27
BP	22.99	18.2	11.8	8.05
CAD	5.98	4.7	5.0	3.38
Cancer	2.3	1.8	0.92	0.63
Gynec	4.14	3.2	4.8	3.25
UTI	3.68	2.9	4.8	3.25
Joint	22.52	17.9	18.3	12.44
Goitre	2.3	1.8	2.1	1.45
Other	32.18	25.5	64.2	43.73
DM	5.52	4.4	3.4	2.3
Backache	3.68	2.9	-	-
Mental	0.92	.7	-	-

## 10. Gender difference in chronic diseases

Tuberculosis and Filaria are common among males. This has to be viewed in the light of small number of observations. Bronchial asthma and high blood pressure show the same prevalence among both genders. Coronary heart disease and carcinoma are more common among men. So is the case with UTI, diabetes and backache. There is generally a low prevalence of chronic disease among women in this study. UTI is generally more common among women due to anatomical reasons



like proplapse, loss of muscle tone, lack of hygiene etc. Still in this study UTI is reported more from males. This may be due to an interviewer bias in the data collection. Higher prevalence of coronary heart disease and carcinoma among men are quite understandable as it is consistent with patterns elsewhere.

Prevalence of some diseases like fits/epilepsy, chronic head ache, chronic chest pain, piles, kidney problems, chronic GIT problems, chronic skin conditions are not forthcoming from these data. This could probably be because of the low prevalence of diseases in the population.

TABLE 23

GENDER DIFFERENCE IN MORBIDITY.		
Disease	Rate 1000	Rate /1000
Leprosy	--	--
TB	2.75	5.51
Filaria	0	2.75
Asthma	12.87	15.63
BP	23.91	22.07
CHD	2.75	9.19
Cancer	0.91	3.67
Gynec	4.59	--
UTI	1.83	5.51
Joint	21.15	22.99
Diabetes	3.67	7.35
Backache	1.83	5.51
Goitre	0.91	2.75
Other	27.59	36.79

## 11. Type of treatment

Modern medicine is still the treatment of choice for most of the people and most of the conditions in the state. Just 21% of the treatment is met by the other systems. The reasons for this situation have not



been sought in the study. The cost of medicines and consultations also change between systems. The emergence of newer diseases and non-communicable diseases adds to this complex issue. This is because when the patient is told about the limitation of modern medicine for curing conditions as coronary disease, diabetes and cancer people seek alternative forms of care. Traditional systems like Ayurveda, and alternate forms like homeopathy enjoy a high level of confidence for certain specific ailments.

TABLE 24

THE SYSTEM OF TREATMENT		
System of Treatment	Frequency	%
Modern medicine	449	78.77
Ayurveda	65	11.4
Homeopathy	41	7.2
Others	15	2.6

## 12. Place of treatment

The place of treatment depends on the perception of the people about the disease, financial capacity, and access to the facility. 8.57 % people decide to treat themselves when illness strikes them, according to the survey. This could be some minor illness, which they think they can manage by themselves. It could also be some other illness where they think there is no cure, or the medicine is costly. The reasons are not captured in the study. Once they decide to go out to get some treatment 31.24% of the people seek government facility. This is to be compared with 63.34% acceptance of the private facility.

TABLE 25,

PLACE OF TREATMENT	
Place of treatment	%
Self	8.57
Govt. Hospital	28.57
Private hospital	58.01
Others	4.76

### 13. Disability pattern

Overall, disability has shown a decline in the repeat survey. Overall disability has come down from 2091/100,000 in 1987 to 1665/100,000 in 1996. This reduction in disability could be due to different reasons. Some instances the disability can be reduced by intervention as in case of cataract. In 1987 survey also the disability rates were lowest in the upper socio economic group. This is explained as a consequence of timely interventions. The reduction in disability could also be due to the changed case definitions. An example is the reduction of mental diseases from 336 to 155.4: this could be due to following reasons: the case definition in the 1987 KSSP study included "strange behaviour". So the chances are that there might have been an overestimate of mental diseases. World Health Report 1998 ranks mood disorders as number one cause of disability in the world with 146 million cases. The reduction in the epilepsy category can also be explained by the altered definition of cases. 1987 it was fits and epilepsy in the place of epilepsy alone in 1996. In the former one may include all the febrile fits that occur among children.

TABLE 26

PATTERN OF DISABILITY / 100,000 POPULATION		
Disability	1987	1996
Mobility	694	377.36
Deaf/ dumb	328	488.4
Blind	208	133.2
Mental	336	155.4
Epilepsy	203	88.8
Mental retardation	210	244.2
Mixed	92	177.6

## 14. Maternal and Child Health

TABLE 27

PLACE OF DELIVERY IN 1987 AND 1996 PERCENTAGE AND NUMBERS		
Place of delivery	1996	1987
Home	02.9 (03)	21.2(279)
Private Hospital	58.3 (60)	41.5(546)
Government Hospital	38.8 (40)	36.9(485)
Others	00.0 (00)	00.4(005)
Total	100.0 (103)	100. (1315)
Unaccounted	00	40

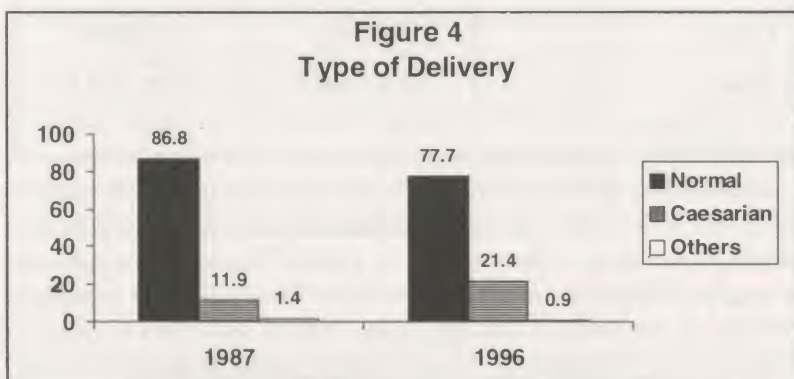
Institutional delivery of 97.1% is an improvement over the figure of 78.4% in the 1987 survey of KSSP and the 92% reported by the sample registration system (SRS) in 1993. The state is gradually moving to a 100 percent institutional delivery. One of the other important findings of the study is that the share of total deliveries in private hospitals has increased by 17 percentage points while that of the government hospitals has increased only by less than a percentage. Majority of those who went for institutional delivery from home delivery during the period of 10 years went to the private hospitals. The rapid growth of private sector in Kerala should be viewed side by side with this. The continued reduction in infant mortality rate in the state may be due to the increase in institutional delivery that reduces the chances of perinatal mortality, which is a major contributor of infant mortality in most developing countries. Institutional delivery in India as a whole during 1993 was only 25%. Many other developing countries had figures of institutional deliveries very close to that of India. Brazil and Dominican Republic are close to that of Kerala (Table 28)

Out of the 103 births 52 were female babies and 51 male babies.



## 14.1 Type of Delivery

Percentage of caesarian sections has gone up from 11.9% in 1987 to 21.4 % in 1996. This is only a rural sample. The urban figures are likely to be higher than this, which would make the caesarian rate in the state very close to one of the highest in the world. One study in Trivandrum district found that the caesarian rates in some of the hospitals was as high as 60%. As per World Health Organization, no region in the world is justified in having a caesarian rate higher than 10-15%. A caesarian section poses documented medical risks to the



mother's health, including infections, hemorrhage, transfusion, injury to other organs, anesthetic complications, psychological complications and a maternal mortality two to four times greater than that for a vaginal birth. There is no reliable estimate of maternal mortality in the state of Kerala. The available figures range from 87 to 168 per 100000 live births. Compared to other health indicators of the state like infant mortality of 13 per 1000 live births, total fertility rate of 1.7, life expectancy of 69 for males and 74 for females, this estimated maternal mortality figure is on the higher side.

The above mentioned health indicators in the state are close to that of developed countries. Maternal mortality is not. A study to unearth the maternal mortality rate and its causes in the state is warranted. One of the reasons for the high maternal mortality rate in the state could be the increasing rate of caesarian sections. In most developing



and developed countries the rate of caesarian section is much less than what we found in Kerala. Only in Brazil the caesarian rates are higher than in Kerala. The American College of Obstetricians and Gynecologists (ACOG) recommends that the concept of routine repeat caesarian be replaced by specific indication for surgery and that most women be counseled and encouraged to labor and have a vaginal birth after a caesarian. Caesarian sections are sometimes performed for reasons other than maternal or fetal well being, such as avoidance of patient pain, patient or provider convenience, provider legal concerns or provider financial incentives.

TABLE 28

CESAREAN SECTION RATES - A COMPARISON					
Country	Sample size	%LCS	%Insti tutional delivery	%skilled attenda nt at deli very	Year
<b>Africa</b>					
Burkina Faso	6302	1.3	43	41	1988-93
Cote d'Ivoire	3989	1.8	45	45	1992-94
Central African Republic	2836	1.9	50	46	1990-95
Egypt	11454	6.6	33	46	1991-95
Kenya	6062	5.2	44	45	1988-92
Madagascar.	5604	1.0	45	57	1987-92
Malawi	4512	3.4	57	57	1988-92
Morocco	2235	3.5	37	40	1990-94
Namibia	3814	7.0	67	68	1987-92
Niger	7094	0.9	16	15	1987-92
Rwanda	5612	1.8	25	26	1987-92
Senegal	5581	2.3	47	47	1988-93
Uganda	6027	2.6	35	38	1992-95
Zimbabwe	2328	6.0	69	69	1991-94

<b>Latin America</b>					
Belize	1490	8.4	76	77	1986-91
Nordeste Brazil	3392	17.9	76	96	1986-91
Brazil	2846	31.6	81	95	1981-86
Brazil	4782	36.4	92	97	1991-96
Colombia	5050	16.9	77	85	1991-95
Dominican Republic	3820	22.0	92	92	1986-91
Ecuador	8837	17.1	64	64	1989-94
Guatemala	9150	8.2	34	35	1991-95
<b>Asia</b>					
Indonesia	16983	2.5	18	34	1989-94
Philippines	8803	5.9	28	53	1988-93
Kerala (rural)	1314	11.9	78	90	1987
<u>Kerala (rural)</u>	103	<u>21.4</u>	97	99	1996
<b>Europe</b>					
United Kingdom		9			1985-90
Finland		111.9			1990-95
Canada		18.3			1989-90
<b>North America</b>					
United States		22.8			1993

*Sources: From Burkina Faso Indonesia Demographic and Health Surveys at national level. For Kerala KSSP Surveys 1987 and 1996. For other countries various sources including personal communication from Elisabeth Aahman at WHO Geneva.*

## 14.2 Birth Weight

Low birth weight (<2500 grams) babies were 13.3% which is an improvement on 19% reported by the National Family Health Survey in 1992-93 for rural Kerala. There was no difference found in birth weight among those who gave birth at private hospitals or in Government hospitals. The average birth weight of the study population

was 2870 grms. Average birth weight of male babies (2945 grams) was found to be slightly higher than that of female babies (2804 grams). Percentage of low birth weight is one health indicator where Kerala still lags behind to other countries in health status comparisons (See table.29). Kerala's health indicators are usually compared to Costa Rica, China and Sri Lanka where a good health status has been achieved at low cost. Low birth weight prevalence is comparatively still high in Kerala. The reasons for the high prevalence of low birth weight in Kerala are unknown. The low calorie intake particularly during the ante natal period could be one of the main reasons.

TABLE 29:

PROPORTION OF LOW BIRTH WEIGHT (LBW) BABIES IN DIFFERENT COUNTRIES	
Name of Country	% of Low Birth Weight
India	30
Pakistan	25
Costa Rica	7
China	6
Kerala (India)	13
USA	7
Sweden	4

*Source: World Development Report 1993 and 1995. The data is for the year 1985 except China which is for the year 1991.*

### 14.3 Expense For Delivery

The expenditure data was available for 92 out of 103 deliveries. The average reported expense for the delivery was Rs. 2505. Average expenditure for deliveries in the private hospital was Rs. 2870 and that of government hospital was Rs 2025. Even though there is a difference in expenditure between private and government hospitals average expense of over Rs 2000 in government hospitals, which are supposed to give free care, shows the depth of lack of supplies, corruption and internal privatization of the public health sector. Average expenditure



for normal delivery was reported as Rs 2145 and for Caesarian delivery as Rs 3800. The expenditure for caesarian delivery is not as high as one would expect. This could be another reason for the increasing rates of caesarian sections in the state. Average cost for a Caesarian section in the United States was reported to be \$ 7186 and that for normal delivery \$4334. The ratio is same in Kerala. Caesarians cost 1.6 times compared to vaginal delivery in the US and 1.7 times in Kerala.

Average expenditure for a normal delivery in the private sector was reported as Rs 2456 and for caesarian delivery was reported as Rs 4944. Expenditure for caesarian delivery is 2 times more than vaginal delivery in the private sector. The average expenditure for vaginal delivery in the government sector was reported as Rs 1670 and that for caesarian section as Rs 2864. Surprisingly the percentage of caesarian sections in the private sector was reported to be only 17% while that in the government sector was as high as 30 percent. In 1987 the percentage of Caesarian sections in the private sector was 16.5% and in government sector was 12.6%. The major shift to caesarian section has taken place in the government sector, the private sector remaining almost unchanged. The reasons for the high increase in the rate of caesarian sections particularly in the government sector need to be studied in detail.

## **15.Utilization of Health Care System**

The present study focuses mainly on the various aspects of the health status of people living in the rural areas of Kerala. While considering the achievements and improvements in health status of the population, one had to assess the healthcare infrastructure and institutions available in the state. But the scope of the present study does not include this aspect. Hence we are not in a position to examine the composition, organization and quantitative dimensions of healthcare institutions. This means that the supply aspects of the healthcare system has not been covered. One of the reasons behind this is the fact that these areas have been cared by other institutional surveys like the one which was carried out by the Directorate of Economics and Statistics



under the Government of Kerala in 1996. The Annual Economic survey report published by the State Planning Board also brings out the various aspects of the supply side of health care system. Some aspects of the demand side of health care system have been covered in the present study.

The people of Kerala depend mainly on three major systems of medicine, viz modern medicine, Ayurveda and Homeopathy. Among them it is not surprising to note that modern medicine accounts for the highest share in utilisation with 79% of the population opting for it as the system of treatment. Ayurveda accounts for 11% and Homeopathy 7%. We had included a category of 'others' in the study. This refers to the various indigenous practices prevailing in the state. But, it is found that the percentage of population preferring this is very negligible. There is a great shift from this category to other systems of medicine during the last one decade. In fact, the study done in 1986-87 had shown that around 12% of the population had gone in for such indigenous practices. There has been increase in utilization of all the three major systems of medicine. Though the increase has been predominantly for modern medicine.

TABLE 30

PERCENTAGE DISTRIBUTION IN THE UTILIZATION OF HEALTH SYSTEM				
Year	Modern	Ayurveda Medicine	Homeopathy	Others
1987	72	10	6	12
1996	79	11	7	3

### 15.1 Utilization of Government and Private Institutions

The different health systems in Kerala are organised under two broad sectors namely, government and private. We can also consider an ill-defined sector, where the people go in for self care. This is especially important in the case of acute illnesses. In the case of acute illnesses, our present study reveals that only around 28% of such cases

have reported to the government hospitals for treatment. 58% seek health care from the private institutions in such instances. Around 5% go to the co-operative institutions and others.

Less than 9% go in for self care in the case of acute illnesses. The utilization of government and private institutions show minor changes over the last one decade. The patients going to the government sector were around 23% in 1987. This has increased to 28%. There is a consequent reduction in the percentage of patients going to the private institutions, from 66% in 1987 (including co-operatives) to around 63% in 1996. Since the sample size covered in these studies is different, one cannot say whether this shift is a real shift in favour of the government sector. But it is the true that even after the growth of private institutions and private healthcare infrastructure facilities, and in the absence of such growth in the government sector, people have not deserted the latter. In fact, many people still prefer to go to government hospitals, inspite of their inadequacies. But it is also true that more than half the population attend to private hospitals for the treatment of acute illness.

TABLE 31

SECTOR WISE DISTRIBUTION OF TREATMENT FOR ACUTE ILLNESS	
Sector	%
Government hospital	28
Private hospital	58
Others	5
Self	9

Our study had to go into the reasons for people opting for private hospitals in case of treatment of acute illnesses. A number of reasons were given by the people in their regard. Of the total number of reasons given, 15% accounted for the reason that private institutions are nearer. 10% gave the reason that there was no doctor at the government hospital. 14% felt that no medicines were available at the government

hospital. 18% of the people accounted for the reason that bribe is to be paid at the government hospital and they get better behaviour from the staff at the private hospital. 23% attribute their going to the private hospitals to the belief that they get adequate care at the private hospital. It is also to be noted that supply factors also favour the private sector. Private sector has a larger share in the total health care institutions in the state and they have a wider spread in rural areas compared to the government sector.

TABLE 32

REASON FOR GOING TO THE PRIVATE HOSPITAL	
Adequate care at private hospital	23
Nearness of private hospital	15
No medicines at government hospital	14
Better behaviour from doctors and staff	13
No treatment from government hospital	10
No doctor at government hospital	10
Bribe at government hospital	5
No cleanliness at government hospital	3
Other reasons	7

Access to hospitals in terms of distance is considered as one of the major factors in the utilization of health care system. The surveys like the NFHS-92 have shown that Kerala is ahead of other states in this regard. The present study. 70% of the population has access to a hospital within 5 kms. In fact, 36% of the total rural population have atleast one hospital within 2 kms. Only 3% had to go more than 10 kms to attend a hospital

## 15.2 Utilisation Of Primary Health Centres

Primary health centres are the key to the government level health care system in the state. The question asked to the respondents was whether they knew about the existence of the primary health centre in their area. More than 80% knew about their existence. This was the same case a decade ago too. But the significance even today is that the rest is not aware of a PHC in the locality. It might be due to the



distance or due to the fact that the PHC might be known as a hospital in the area and in some cases, the PHC earmarked for a particular panchayat might be located in some other area. The next question regarding the utilization of primary health centre received definite answers. 40% of the rural population attend primary health centres. But, the previous study in 1987 also had come out with the same result. One can argue that the PHCs have not lost their significance, but it is also true that the utilization is low considering that the PHCs are in rural areas.

We had enquired into the reasons why the 60% the population are not utilizing the PHC services. The lack of medicines and the distance were the two major reasons, 22% of the people highlighting each of these reasons. 19% attributed it to the absence of doctors while 16% blamed it on lack of availability of treatment facilities. 15% said that they do not have 'faith' in the services rendered at the PHCs. All these reasons point to the fact that the people consider Primary Health Centers as curative centres alone. The major objectives of a primary health centre being preventive health oriented, even in this state where health awareness and education levels are high, the message has not been sent across to the population. This has to be considered in the context of 75% of the households reporting that the health workers from the Primary Health Centre had not visited the house in the preceding one month. A decade ago also, 82% of the households replied in the same way. One may argue that there is a slight improvement, but the manpower wasted is to be looked into. There has to be a serious effort to study how the work of health workers can be re-oriented in the context of Kerala's health status.

## **16. Household expenditure on medical care**

The economic burden of ill health includes direct expenditure for medical care as well as loss of earnings. Of this the first is easily ascertained in household health surveys. We have collected data on medical expenditure incurred in the fortnight prior to the survey. This ensures good recall and would include expenses for acute as well as chronic illness during the period and simple extrapolation would give



the total annual expenditure for medical care. Since the basic method employed in 1987 was similar, comparison is possible.

The medical expenditure per morbid person per episode increased from Rs 16.56 to Rs 165.22 during the decade, an increase of 898%. (Table 33). The per capita medical expenditure rose from Rs 88.92 to Rs 548.86 during the period, the rate of increase being 517% (Table 34). This lower rate of increase in comparison to the rate of increase for expenditure on morbidity episodes is a simple reflection of the significant reduction in the morbidity rate.

An approximate estimate of the general rise in cost of living can be calculated at a compound rate of 10% annual increase in the consumer price index. This works out to an increase of 136% in nine years. The fact that rise in per capita medical expenditure is four times this figure attests to the high degree of *Mediflation* that has occurred during the period under study.

Table 33

MEDICAL EXPENDITURE (RS) PER MORBID PERSON PER EPISODE ( 1987 & 1996)			
Item of Expenditure	1987	1996	% increase
Drug	8.24	83.48	913
Fee	2.90	29.87	930
Other	5.41	51.87	859
Total	16.56	165.22	898

Table 34

MEDICAL EXPENDITURE (RS) PER CAPITA PER YEAR (1987 & 1996)			
Item of Expenditure	1987	1996	% increase
Drug	44.20	282.36	539
Fee	15.60	99.06	535
Other	29.12	167.44	475
Total	88.92	548.86	517

It is clear from tables 33 and 34 that the rate of explosive increase is not confined to a single item like medicines. True, the period witnessed big spurts in drug prices, but doctor's fees and other items (like laboratory tests) have also increased at nearly the same rates. Nor is the *mediflation* confined to Modern medicine (Table 35). Modern medicine continues to be the costliest followed by Ayurveda and Homeopathy in that order, but the proportions are similar in 1987 and 1996. The rate of increase of expenses for Ayurveda and Homeopathy are not appreciably different. It is well known that the cost of Ayurvedic drugs have also risen rapidly in recent years, and many of these products are now marketed aggressively like the modern medicine drugs. The physicians and others working in the other systems like Ayurveda and Homeopathy have training similar to those in Modern medicine and are thus very conscious of their status vis a vis the latter. So, any significant change in incomes in the modern medicine sector is bound to affect the others as well.

TABLE 35

MEDICAL EXPENDITURE (RS) PER MORBID PERSON PER EPISODE BY SYSTEM ( 1987 & 1996)			
System	1987	1996	% increase
Modern medicine	20.72	197.19	852
Ayurveda	10.80	98.97	816
Homeopathy	7.47	66.44	789
Other	NA	45.57	-

The difference between expenditure in the Private and Government sectors is negligible in this study. (Table 36). Again, this is not very surprising since in most Government hospitals, drugs have to be purchased by the patient from the market. In addition, there is the system of private practice by Government doctors and corruption at all levels. A valid question that can be raised is ' what is the *raison d'être* of Government hospitals if they cannot provide cheaper medical care to the needy? Successive Governments of the right and left have not shown the necessary political will to ensure this.

TABLE 36

MEDICAL EXPENDITURE (RS) PER MORBID PERSON PER EPISODE BY SECTOR (1996)	
Sector	Expenditure
Home	46.55
Government	183.96
Private	195.71
Other	171.10

By far, the most disturbing fact to emerge from the study is that the impact of mediflation is most severe in the lower socio-economic groups (Tables 37 and 38). While the rise in per capita medical expenditure in the study period is 326% and 254% in SES 3 and 4 respectively, it is 768% for SES 1 and a whopping 1010% for SES 2. Similarly the ratio of annual per capita medical expenditure to the per capita income shows a very uneven distribution across the social groups. In the richest segment, this ratio as percentage was 2.18 in 1987 and 2.44 in 1996, whereas in the poorest it rose from 7.18% to an almost unbelievable figure of 39.63% according to the study. Even in SES 2 medical expenditure is 16.11% of the income. Even granting certain degree of underreporting of incomes, this is a very high figure, and undoubtedly is a major contributing factor to debt and further impoverishment among those on the lower rungs of the social ladder.

The reasons for the differences in the impact of mediflation across the social spectrum are yet to be studied. But one point seems to stand out. As seen in table 37, the differences in annual per capita medical expenditure between the lower and higher social classes that was seen in 1987 has largely vanished in 1996. This would tend to imply that the sort of discrimination practised by doctors in prescribing, ordering investigations etc. are being given up. Use of costlier drugs when cheaper substitutes are available, ordering scanning procedures etc. are probably increasingly being resorted to ignoring the socio-economic condition of the patients. Simultaneously such newer drugs and facilities are becoming unavailable in the Government sector. Even



when they are available, they are being priced by outside agencies that bring these technologies like the KHRWS and Hospital development societies. The social usefulness of these agencies needs to be debated.

Table 37

ANNUAL PER CAPITA MEDICAL EXPENDITURE BY SOCIOECONOMIC STATUS (1987 & 1996)			
Status	1987	1996	% increase
I	54.99	477.26	768
II	42.11	467.26	1010
III	126.33	538.27	326
IV	160.80	569.49	254
All	88.92	548.86	517

TABLE 38

ANNUAL PER CAPITA MEDICAL EXPENDITURE AS % OF PER CAPITA INCOME BY SOCIO-ECONOMIC CLASS (1987 & 1996)			
Status	1987	1996	% increase
I	7.18	39.63	452
II	2.93	16.11	450
III	3.38	5.08	50
IV	2.18	2.44	12
All	3.57	6.79	90

In summary, the decade under study saw a pronounced increase in per capita medical expenditure constituting a *mediflation*. The bitter irony is that this occurred in a period of remarkable decline in morbidity. The poorer sections of society have borne the brunt of these changes. Any Government with a social conscience cannot remain passive in this situation and must show the necessary political will for corrective measures.



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## APPENDIX I

### A STATUS-BASED APPROACH TO UNDERSTANDING HEALTH

*(Reproduced from 'Health and Development in Rural Kerala' KSSP, 1991 pages 24-30, to illustrate the socio - economic group construction. Note that only in the income parameters have been changed in the present study)*

It is well known that the health status of people is influenced to a great extent by the level of economic status. While this statement might be readily accepted by the scholars, empirical work on health status of people in developing countries vis-a-vis their economic status is few. Our survey was an aware of the need to create a community based primary data on the health status. However, it was also recognised from the very beginning that it would be highly useful to examine the health status on the basis of the socio-economic status of the population. In addition the relevance of the physical environmental factors was also recognised on this basis an environmental status grouping was also incorporated. This chapter is intended to discuss the approach and methodology by which the socio-economic status have been incorporated in the study.

We decided to the households in terms of tow status groups. One is the Socio-Economic Status (SES) and the other Environmental Status (ENS). The first status relates to the socio-economic characteristics of the households. The characteristics included are (i) per capita income (ii) household land ownership, (iii) household educational status, and (iv) housing condition.

Each of these characteristics in SES was ranked from 1 to 4, the former denoting the bottom position and the latter denoting the top position. Rank2 would be just above 1 and hence close to the lower position and rank 3 would be nearer to the higher position and hence close to 4. These individual ranks were used to construct a weighted

average in order to construct four groups within SES. These will be discussed later. First we take up the rationale for ranking the individual characteristics in SES.

## SES CHARACTERISTICS

### (i) INCOME:

The figures relating to income are those reported by the heads of the households. This of course is not the best way of estimating income but for our survey we had to settle for a less time consuming procedure. Given the general tendency, there would indeed be under reporting of income by the households but we presume that such bias would be more or less uniformly distributed.. Per capita income was worked out and the households were ranked as follows.

1. if the per capita income was <Rs. 100 per month
2. if the per capita income was >Rs. 100 but < Rs.190
3. if the per capita income was >Rs.190 but <Rs.250 .
4. if the per capita income was >Rs.250

Rs.100 is roughly the cut-off point for a person in rural Kerala to cross the official poverty line in 1987 Poverty line here refers to the minimum amount re required per person per month at 1960-61 prices (Rs.16.10 for rural Kerala as per Bardhan 1973) inflated by the Consumer Price Index for Agricultural Labour. All those below this level of income was therefore ranked as I. Less than 75 percent of the average per capita monthly expenditure in Kerala at 1987 prices is taken as status 2 indicating a lower middle position and more than 75 percent as indicating the upper middle position. Income which exceeded the average per capita expenditure was assigned the top position of status 4.

The results are interesting for several reasons. First of all those who could be located below the poverty line constitute more than one-third of the households which could be interpreted loosely as one third of the population. The Planning Commission's own estimate is much lower (around 23 percent) and our survey results seem to give higher estimate. However, the state government has been contending that



the proportion below the poverty line in Kerala came to 50 percent much would depend on the source of data and the inflation of poverty line will perhaps continue and much would depend on the source of date and methodology of estimation. Here we have used the reported income as the source of data and the inflation of poverty line for 1987 prices has been done by using the Consumer Price Index for Agricultural Labourers. If the latter is taken to be a reasonable price Index for Agricultural Labourers. If the latter is taken to be a reasonable price index for the purpose, then the question is on the reliability of income data. If that is taken into account, the probability of under reporting is much higher than otherwise, In that sense, the estimate of persons below the poverty line could be on the higher side. This seems to be borne out by another important characteristics, viz. The condition of housing.

(ii) LAND OWNERSHIP:

Here again the total lands owned by the household was taken into account and the households were divided into the follows four groups.

1. if the land owned is <11 cents
2. if the land owned is 11 to 50 cents
3. if the land owned is 51 to 250 cents
4. if the land owned is >250 cents.

The first is generally the land less or land-poor, most of them owning a few cents of homestead land. Under the Kerala Government scheme of redistribution of land to the land less 10 cents was the upper limit. The second status group would be marginal farmers who may not be able to derive any substantial income from land. The third group comprised the small farmers; the cut off point corresponds to the norm set for the distribution of credit, etc. The last group would be those above the status of small farmers and they are grouped together here.

The land distribution brings out that in the below 10 cents category are around 27 percent; this is less than as estimated those below the poverty line. It can be generally said that those in this category in rural areas are likely to be more vulnerable to poverty than those in other

categories. Thus, those who are 'land-poor' seem to be less than those who are 'income poor'. If, however, allowance is made for possible under reporting of income then the differential is likely to narrow.

### (iii) EDUCATIONAL ATTAINMENTS:

In classifying households according to educational attainments, we had to take into account the special conditions obtaining in Kerala. There were only 2 percent of the Households where all the members were illiterate. This meant that most households have someone who is literate or has school going children. It was, therefore, decided to apply rather stringent criteria as far as education was concerned. The ranking was as follows:

1. if the household has at least one member having 7 years of schooling but no one having high school or above high school level education;
2. if the household has at least one member having high school level education but none with above high school level education
3. if the household has more than one member with high school level education and or at least one member with above high school level education;
4. if the household has more than one member with above high school level education.

The results are quite interesting in that more than half (50 percent) of rural households in Kerala have at least one member with above high school level education. This need not necessarily mean higher education leading to degrees, etc. only but would also include any formal training programme beyond the secondary level such as Pre-Degree, vocational training in polytechnics, Industrial Training Institutes and so on. Those in the bottom-line, i.e. those households without any member having above seven-year schooling is around 26 percent, close to the bottom line in land ownership.

### (iv) HOUSING CONDITION:

Two elements of the housing condition were considered; one was the floor area and the other the type of roof. The details of the group-

ing under these two housing characteristics are given below.

1. if the floor area was 200 sq. ft. or below.
2. If the floor area was between 201 to 500 sq. ft;
3. If the floor area was between 501 and 1000 sq. ft;
4. If the floor area was more than 1000 sq. ft.

For the type or roofing, the following were considered.

1. if the roof was made of grass, thatch, etc;
2. if the roof was made of tiles.
3. If the roof was made of tiles.
4. If the roof was made of concrete.

### **CONSTRUCTION OF ECONOMIC STATUS GROUPS**

All these characteristics were used to construct an SES grouping for the rural households, the underlying reason being that no single indicator could be able to capture the socio-economic status unbiasedly. The under reporting of income could be counterbalanced, to some extent, by distribution of land ownership. Further the housing condition would be visible indicator of the socio-economic status of the households. The weights assigned to the various characteristics was mainly based on their value for understanding health status. The weights assigned were 0.35 for income, 0.25 for housing (roof 0.10 and .area 0.15) and 0.15 for land. Per capita income was considered most important for health status since payments will have to be incurred in the event of treatment. Education was related to awareness of health care. Housing condition to some extent would reflect the physical amenities and land was taken as a countercheck for income. The ranks obtained were weighted and four groups of SES was obtained. We have characterised these as: SES 1 Poor, SES2 Somewhat poor, SES3 Not poor, SES4 Better off.

It is interesting to observe the changes in the distribution of households in terms of the SES groups. Those in the status groups of poor is much less (almost half) than their share when individual characteristics are considered. This means that the poor in Kerala are not uni-

formly poor in respect of all the four characteristics considered here. Nearly half the households have at least one characteristic which is above the bottom position and this is evident in the size of the Somewhat Poor status group. The case of the Better Off is somewhat similar to the Poor in the sense that the share of this group is higher when individual characteristics are considered. This again means that a number of households are not better Off in all four respects. And riches are relatively small in rural Kerala. Correspondingly, there is a dominance of middle group (the Somewhat Poor and Not Poor) of which on third comprises of the Not Poor who may be characterised as the 'middle class'.

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## KERALA SASTRA SAHITHYA PARISHAD

Kerala Sasthra Sahithya Parishad is a voluntary organisation with a very wide network of activists all over the state of Kerala. People's Health is one of the important areas of interest to the KSSP, besides education, ecology, environment, energy and decentralisation.

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